

Missouri's 2018 Timber Products Output Report



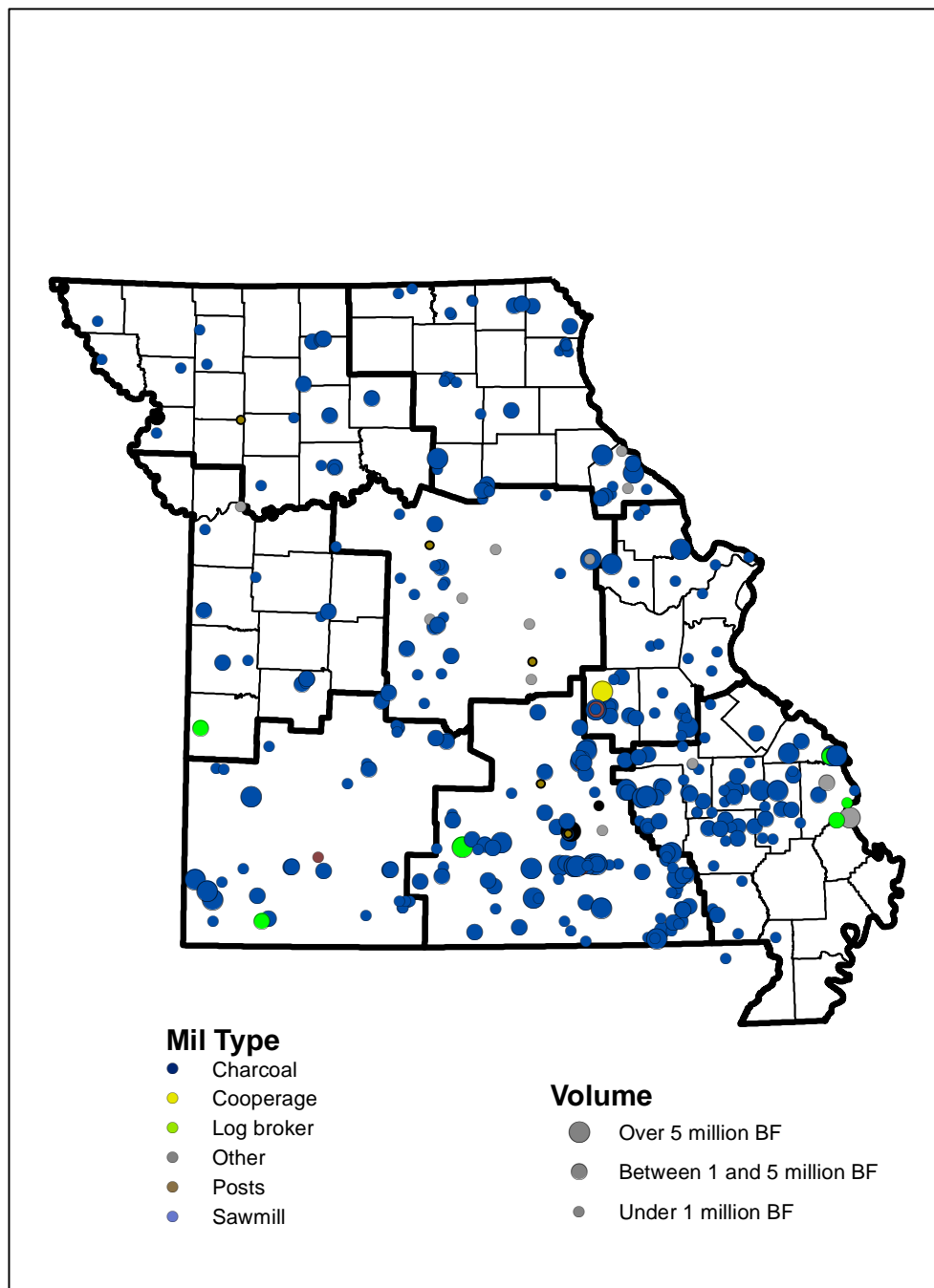


Figure 1 - Locations of active primary wood-using mills with mill size and type, Missouri, 2018

2018 MDC Timber Product Output (TPO) Report

Tom Treiman and Mike Morris, Missouri Department of Conservation, Oct. 2019

In the spring and early summer of 2019, the Missouri Department of Conservation interviewed mill owner/operators from a random-sample of primary wood processors throughout the state, asking for information on their firms from 2018. In this report we present forest industry trends, harvest levels and other details. Such detailed information is necessary for intelligent planning and decision making in wood procurement, forest resources management, and forest industry development. Likewise, researchers need current forest industry and industrial roundwood information for planning projects.

Special thanks are given to the primary wood-using firms for supplying information for this study and to the Missouri Department of Conservation Foresters for canvassing the respondents. Following new USFS guidelines, the survey sample consisted of 142 mills, out of approximately 410 mills that were or had been operating in Missouri at the time of previous TPO efforts in 2015 and 2012, both of which were complete censuses of all mills. About 72% of contacted mills agreed to complete the survey. Their cooperation is greatly appreciated.

All comparisons and analysis in this report are based on the reprocessed data from earlier surveys, which may not match earlier published data. Totals are calculated based on the samples mills current data, and on data from previous years for mills that were not sampled. Data from surrounding states (imports and exports to and from Missouri) is unavailable at the time of writing. As other states report, figures in this report may become out-of-date.

All board foot data in this report have been converted to International 1/4-inch scale by applying a multiplier of 1.08 to all roundwood volumes reported in Scribner Decimal C scale by sawmills and handle mills, a multiplier of 1.04 to all roundwood volumes reported in Scribner Decimal C scale by veneer and cooperage mills, a multiplier of 1.38 to all roundwood volume reported in Doyle scale by sawmills and handle mills, and a multiplier of 1.14 to all roundwood volume reported in Doyle scale by veneer and cooperage mills.

- In 2018, Missouri's primary wood using industry was comprised of 342 sawmills, 2 cooperage mills, 5 post and pole mills, 3 charcoal plants, 9 log brokers, and 13 mills producing other products (Table 1).

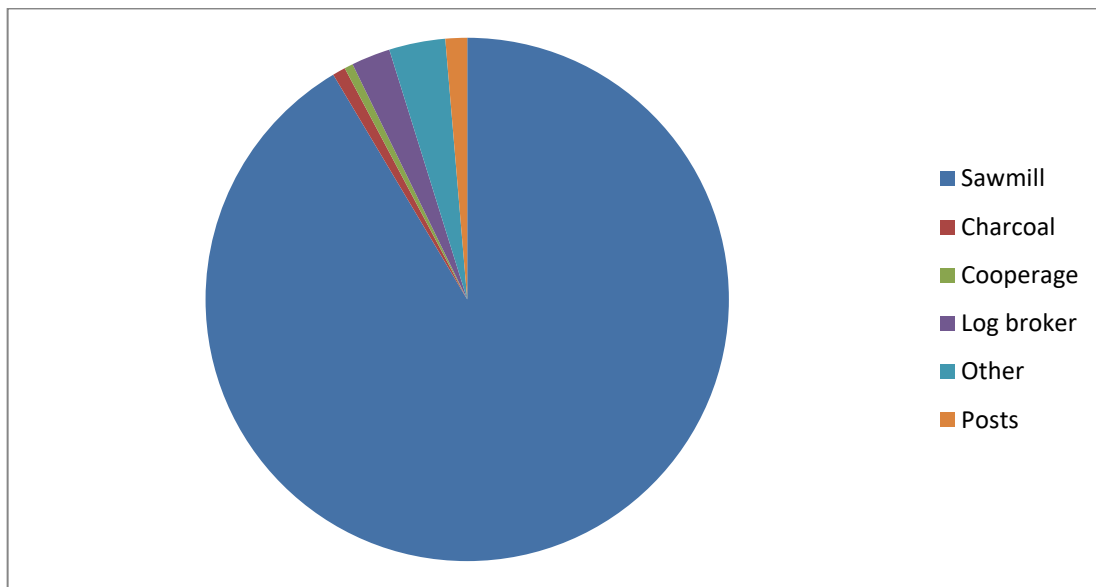


Figure 2 - Mills by type, 2018.

- Circular sawmills accounted for 44% of total volume and band sawmills for about 29%. (Table 8)

- Since the 1990s, the number of mills in Missouri has changed little, compared to major declines earlier in the 20th century.

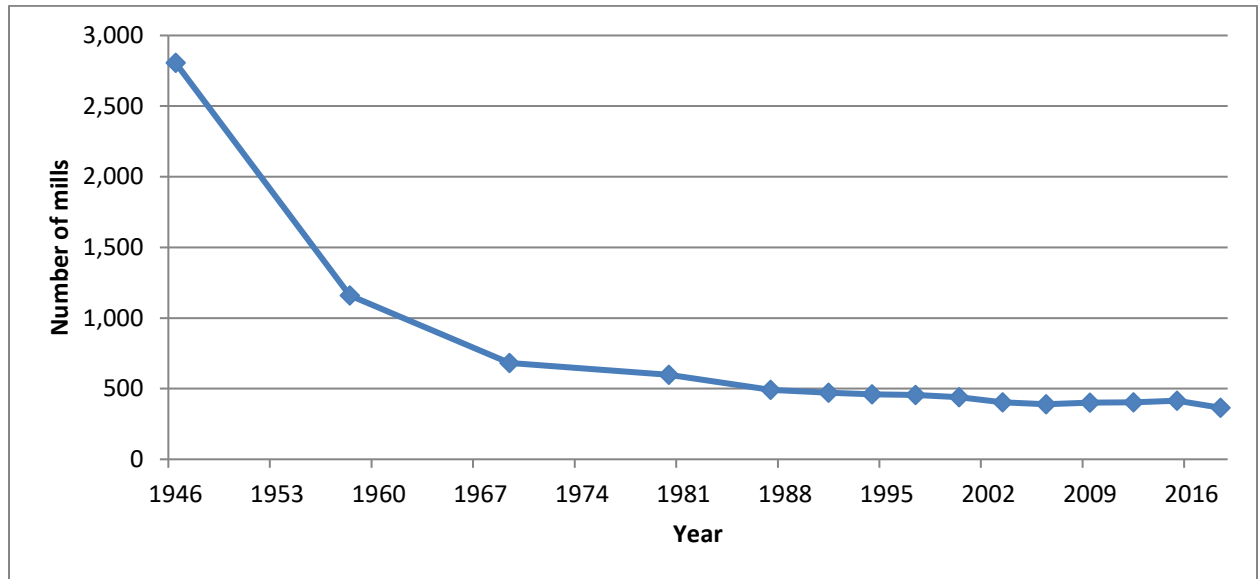


Figure 3 - Number of Missouri mills over time.

- In 2018 the total number of sawmills in Missouri was 342 compared with 380 mills in 2015.

- There were 36 large mills (with an annual lumber production of 5 million board feet or more) as in 2015, while the number of small mills (under 1 million BF) decreased by 40.

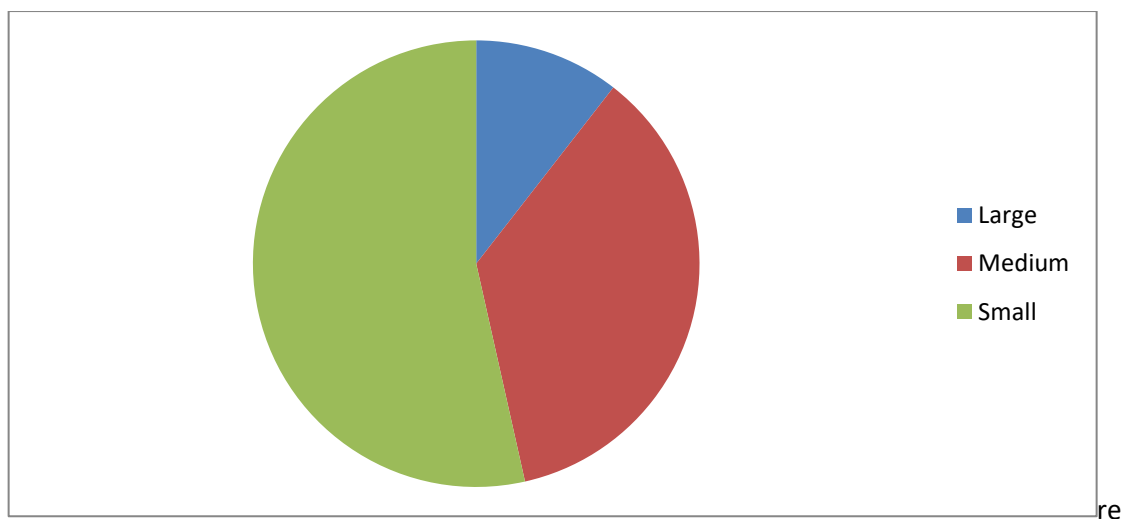


Figure 4 - Mills by size, 2018.

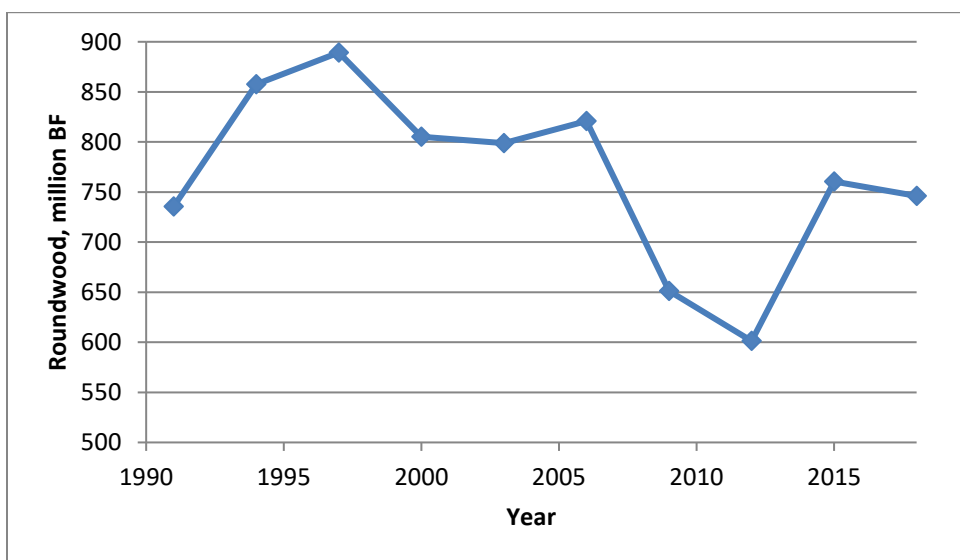


Figure 5 - Mill receipts over time.

- In 2018, the primary wood-using mills in Missouri processed about 746,200 MBF of industrial roundwood, about 14,000 MBF less than processed in 2015. (

- Table 2).
- About 87,000 MBF harvested from other states. (Table 4)
- Domestic log brokers in Missouri (those who export from Missouri to other states) reported handling about 12,000 MBF. Based on 2009 data (the latest available), other states, primarily Kentucky and Iowa, imported about 44,600 MBF of roundwood from Missouri (including from Missouri log brokers.)
- About 7% of the industrial roundwood processed by Missouri mills consisted of softwood species (

- Table 2). About 78% consisted of sawlogs and bolts. (Table 8)
- In 2018, the MDC's Ozark Region was the leading supplier of industrial roundwood in Missouri, with about 252,000 MBF, or about 34% of the total industrial roundwood produced. The Southeast Region was second with 22%. (

- Table 2)
- The top counties for industrial roundwood supply included Shannon, Texas, Reynolds, and Washington.

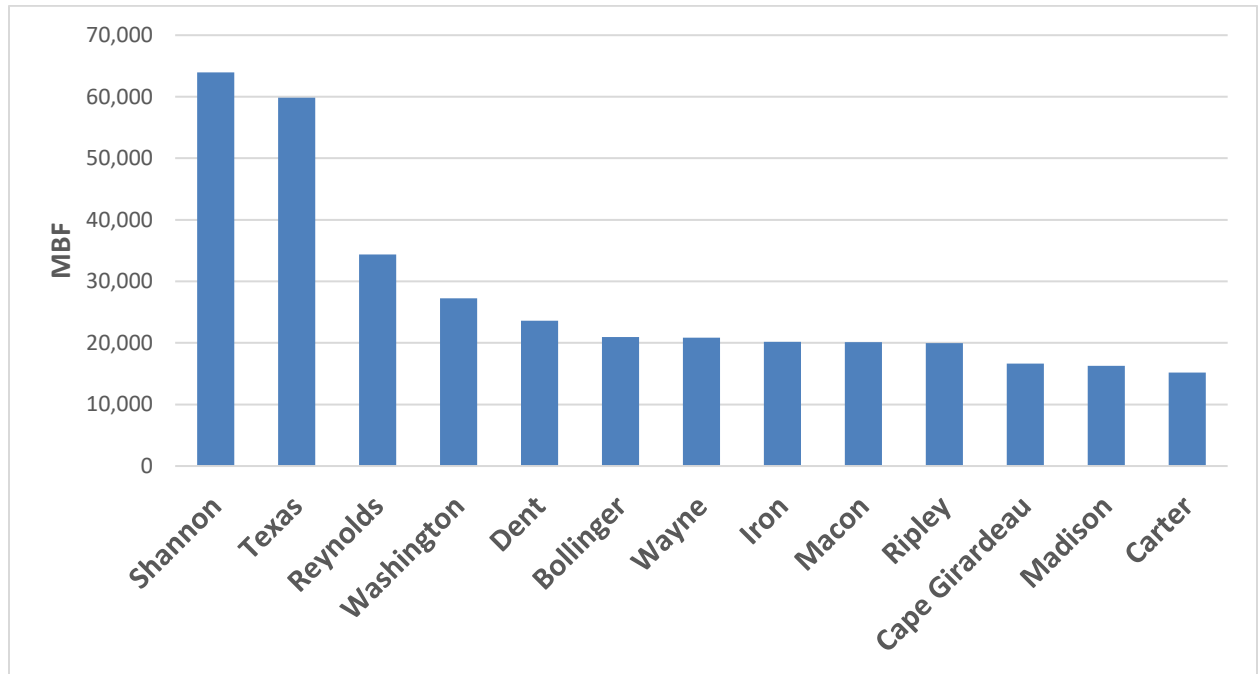


Figure 6 - Top counties by harvest, 2018.

- The red oak group was the most harvested species group in 2018, accounting for 41% of the total industrial roundwood volume. White oaks at about 30%, “other hardwoods” 6.7%, and hickory at 6.6%, were the other major species harvested. (

- Table 2)

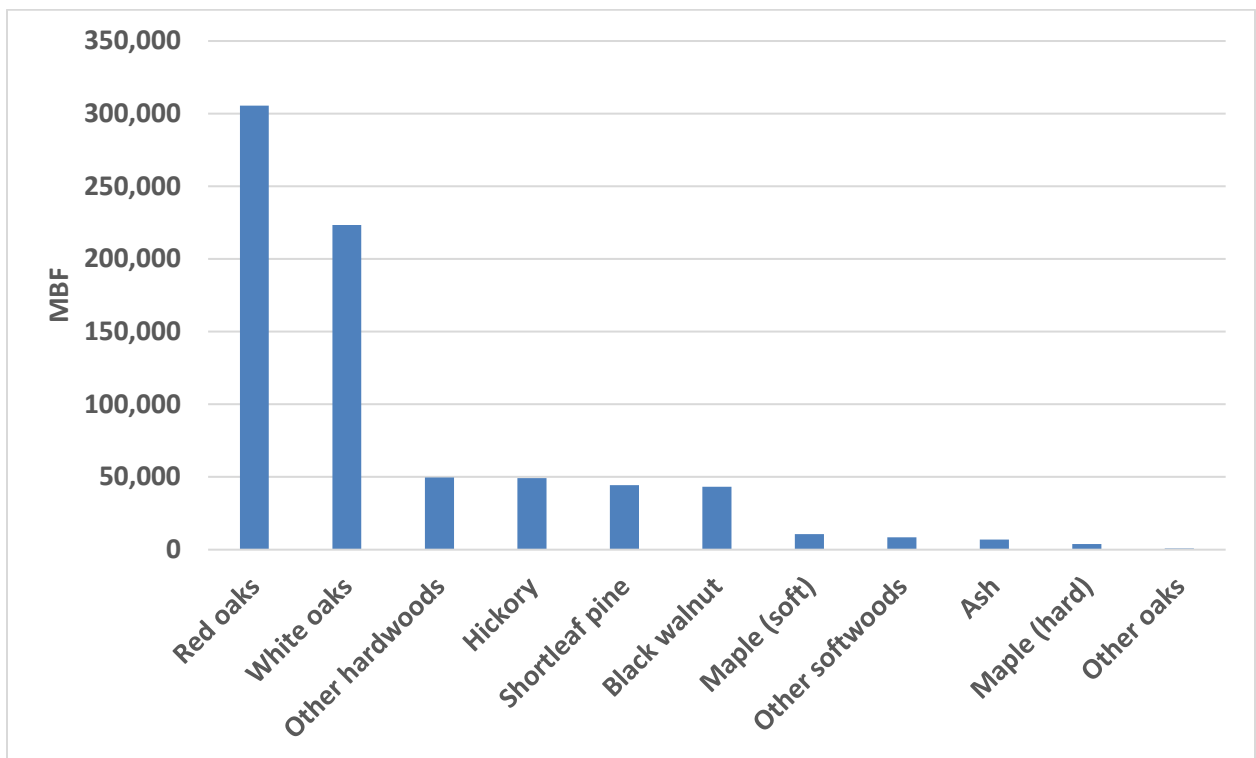


Figure 7 - Top species, 2018.

- Comparing harvest results from the 2018 primary wood processor survey with 2018 growth results from Forest Inventory and Analysis plot work, shows that the Northeast, Ozark and Southeast Regions cut the largest percentage of their growth (about 67%) while the Kansas City Region cut the smallest percentage of growth (25%). About 78% of red oak growth and 58% of white oak growth were harvested statewide. (Table 5)

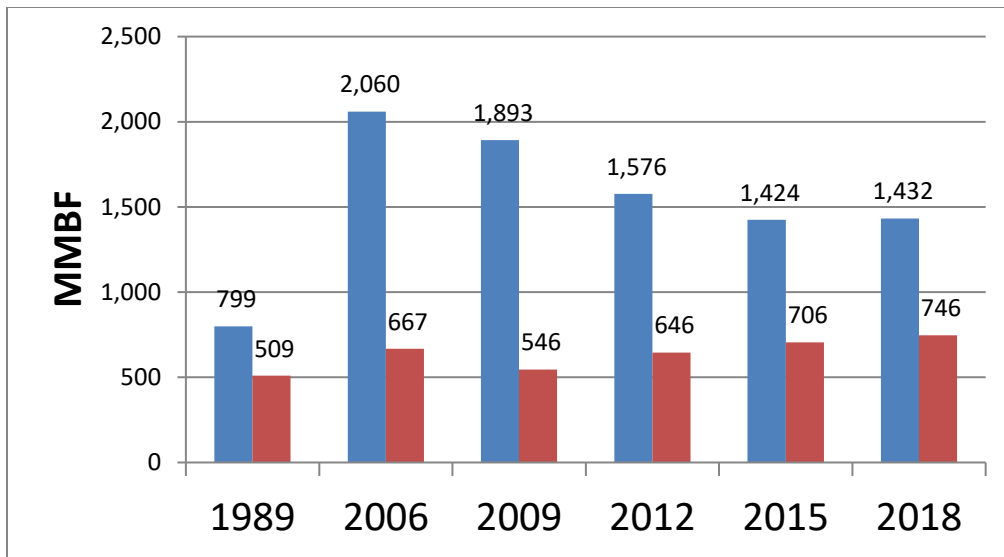


Figure 8 – Growth vs. harvest over time.

- Using USFS formulae, Missouri mills produced about 2 million green tons of residues in 2018. The bulk of this was coarse residues (suitable for chipping) from hardwoods (Table 6).
- Weighting responses by mill volume, less than 5% of mill residues went unused. Over 36% were used for charcoal and 27% or so were used for “miscellaneous and other” purposes (Table 7).
- While 95% of sawmill residues are currently being utilized, very little harvest residue is utilized. According to 2009 data, 102.6 million cubic feet of wood was utilized in that year. An additional 71.6 million cubic feet of wood was generated from logging slash, logging residues, cull trees, etc. The vast majority of this woody material is not currently being utilized.
- Using 2018 price data from Missouri Timber Price Trends (TPT), an estimated \$191 million could potentially have been paid to landowners for the timber harvested. This includes about \$70 million for red oaks, \$54 million for white oaks and nearly \$34 million for walnut. TPT price figures are, however, based only on reports from MDC, consulting or other professional foresters. As such they represent prices at well-managed,

marked and monitored timber sales. For those landowners who do not use a professional forester, the presumption is that prices are significantly lower, so the actual total paid to landowners in 2018 is surely less than \$191 million.

- In 2017, the most recent available data, forest products, wood, lumber, paper and related industries contributed \$10 billion to the Missouri economy, in 2018 dollars. These industries support over 46,000 jobs at a payroll of over \$2.6 billion and are responsible for nearly \$800 million in taxes that help to run our state and country, including \$103 million in state sales tax. These numbers include logging and sawmill operations, secondary wood products, furniture and cabinet makers, log cabins, paperboard manufacturing and so on. The grand total includes not only the direct effect of jobs in the industry but secondary effects in the economy as a whole. Secondary effects are the changes in economic activity from subsequent rounds of re-spending of primary dollars. There are two types of secondary effects: 1) Indirect effects are the changes in sales, income, or employment within the region in backward-linked industries supplying goods and services to forest products industry. 2) Induced effects are the increased sales within the region from household spending of the income earned in the forest products and supporting industries. Forest products employees spend the income they earn from tourism on housing, utilities, groceries, and other consumer goods and services. This generates sales, income, and employment throughout the region's economy.

Table 1 – Number of active primary wood-using mills by MDC Region, Missouri, 2018.

Type	Size	# of Mills	MDC Region								2015 # of mills
			Central	Kansas City	Northeast	Northwest	Ozark	Southeast	Southwest	St. Louis	
Sawmill	Large ¹	36	2		3		14	10	4	3	36
	Medium ²	123	12	6	10	7	39	32	11	6	121
	Small ³	183	18	9	29	11	42	31	23	20	223
Sub-Total		342									380
Charcoal		3					3				3
Cooperage		2						1		1	2
Log broker		9		1		1	2	4	1		15
Other		13	6	1	2		1	3			22
Posts		5					3		1	1	8
Total		374	38	17	44	19	104	81	40	31	430

¹ More than 5 million bf

² Between 1 and 5 million bf

³ Less than 1 million bf

Table 2 – Harvest volume by species group and MDC Region, Missouri, 2018.

Species Group	Volume (MBF)	Pct. of Total	MDC Region							
			Central	Kansas City	Northeast	Northwest	Ozark	Southeast	Southwest	St. Louis
Shortleaf pine	44,280.9	5.9%	183.9	13.0	0.8	0.8	30,677.1	9,314.4	349.4	3,741.5
Other softwoods	8,490.9	1.1%	3,196.9	125.6	212.0	62.5	1,296.3	578.4	2,766.6	252.7
White oaks	223,450.7	29.9%	26,389.3	7,000.8	23,429.1	7,140.9	67,359.0	50,699.4	20,192.0	21,240.2
Red oaks	305,554.8	40.9%	18,257.7	4,268.0	17,972.1	4,549.0	125,684.3	74,766.8	31,023.2	29,033.9
Other oaks	761.8	0.1%			132.5	149.0	165.6	165.6	149.0	
Hickory	49,306.8	6.6%	4,108.6	1,359.9	3,403.1	1,156.6	17,666.6	15,252.0	2,979.9	3,380.1
Maple (hard)	3,822.0	0.5%	395.4	3.5	430.8	8.4	59.9	2,162.2	41.3	720.4
Maple (soft)	10,672.2	1.4%	1,288.3	503.4	4,534.6	1,702.6	121.3	1,676.6	398.4	447.1
Ash	6,959.6	0.9%	683.8	406.4	978.7	957.1	170.8	3,049.4	451.3	262.0
Black walnut	43,193.7	5.8%	4,235.3	4,800.1	2,021.3	4,453.2	6,816.6	2,467.3	17,943.7	456.2
Other hardwoods	49,752.3	6.7%	5,292.6	3,129.1	11,584.9	11,276.2	2,081.5	8,615.4	4,933.0	2,839.6
Total	746,245.9		64,031.8	21,609.8	64,700.0	31,456.3	252,099.0	168,747.6	81,227.8	62,373.7
Pct. of Total			8.6%	2.9%	8.7%	4.2%	33.8%	22.6%	10.9%	8.4%

Note: Harvest volume includes only volume from Missouri.

Table 3 – Harvest volume by county in MBF, Missouri, 2018.

County	Region	Total Volume
Adair	Northeast	5,060.5
Andrew	Northwest	304.9
Atchison	Northwest	256.1
Audrain	Central	3,909.4
Barry	Southwest	7,021.5
Barton	Southwest	3,296.2
Bates	Kansas City	2,368.5
Benton	Kansas City	1,788.0
Bollinger	Southeast	20,960.6
Boone	Central	7,841.2
Buchanan	Northwest	1,079.1
Butler	Southeast	6,663.5
Caldwell	Northwest	551.6
Callaway	Central	2,701.8
Camden	Central	8,448.0
Cape Girardeau	Southeast	16,620.4
Carroll	Northwest	5,067.1
Carter	Ozark	14,793.2
Cass	Kansas City	839.8
Cedar	Southwest	2,096.8
Chariton	Northwest	6,950.2
Christian	Southwest	4,627.9
City of St. Louis	St. Louis	706.2
Clark	Northeast	5,355.8
Clay	Kansas City	370.0
Clinton	Northwest	384.7
Cole	Central	5,961.7
Cooper	Central	3,006.4
Crawford	St. Louis	10,609.4
Dade	Southwest	2,997.1
Dallas	Southwest	5,100.6
Daviess	Northwest	1,657.7
De Kalb	Northwest	372.0
Dent	Ozark	23,536.5
Douglas	Ozark	13,358.9
Dunklin	Southeast	342.3
Franklin	St. Louis	6,476.6
Gasconade	Central	6,157.5
Gentry	Northwest	1,601.4
Greene	Southwest	4,243.2
Grundy	Northwest	3,416.2

County	Region	Total Volume
Harrison	Northwest	1,032.4
Henry	Kansas City	2,166.4
Hickory	Southwest	2,243.3
Holt	Northwest	413.7
Howard	Central	4,715.0
Howell	Ozark	7,552.3
Iron	Southeast	20,177.9
Jackson	Kansas City	306.5
Jasper	Southwest	3,209.9
Jefferson	St. Louis	6,176.9
Johnson	Kansas City	1,449.4
Knox	Northeast	1,690.8
Laclede	Southwest	8,151.6
Lafayette	Kansas City	634.7
Lawrence	Southwest	5,244.2
Lewis	Northeast	2,114.0
Lincoln	St. Louis	3,456.9
Linn	Northwest	1,111.1
Livingston	Northwest	4,590.9
Macon	Northeast	20,048.9
Madison	Southeast	16,299.6
Maries	Central	5,297.0
Marion	Northeast	1,499.2
McDonald	Southwest	6,326.4
Mercer	Northwest	678.6
Miller	Central	2,837.3
Mississippi	Southeast	201.3
Moniteau	Central	1,236.6
Monroe	Northeast	5,268.1
Montgomery	Central	5,065.6
Morgan	Central	3,525.6
New Madrid	Southeast	2,387.6
Newton	Southwest	8,968.1
Nodaway	Northwest	729.2
Oregon	Ozark	12,596.5
Osage	Central	1,672.4
Ozark	Ozark	7,815.4
Pemiscot	Southeast	99.6
Perry	Southeast	14,023.4
Pettis	Kansas City	772.3
Phelps	Ozark	8,137.1
Pike	Northeast	6,521.5

County	Region	Total Volume
Platte	Kansas City	448.7
Polk	Southwest	2,782.4
Pulaski	Ozark	6,705.5
Putnam	Northeast	907.4
Ralls	Northeast	3,417.4
Randolph	Northeast	4,204.3
Ray	Northwest	945.1
Reynolds	Southeast	34,386.3
Ripley	Ozark	17,874.6
Saline	Central	1,221.8
Schuyler	Northeast	1,036.1
Scotland	Northeast	2,297.3
Scott	Southeast	5,334.5
Shannon	Ozark	63,862.6
Shelby	Northeast	3,554.7
St Charles	St. Louis	1,460.9
St Clair	Kansas City	3,902.4
St Francois	Southeast	3,619.3
St Louis	St. Louis	987.8
Ste Genevieve	Southeast	2,505.1
Ste. Genevieve	Southeast	1,480.9
Stoddard	Southeast	2,506.9
Stone	Southwest	3,735.2
Sullivan	Northeast	1,239.4
Taney	Southwest	3,697.5
Texas	Ozark	57,848.4
Vernon	Kansas City	2,772.7
Warren	St. Louis	2,085.7
Washington	St. Louis	27,222.7
Wayne	Southeast	20,586.6
Webster	Southwest	5,843.5
Worth	Northwest	215.1
Wright	Ozark	8,778.1

Table 4 –Volume of wood received from other states, Missouri, 2018.

State	Volume (MBF)
Arkansas	24,453.6
Illinois	26,929.2
Indiana	465.8
Iowa	4,507.7
Kansas	12,121.7
Kentucky	6,324.9
Louisiana	289.8
Michigan	423.0
Mississippi	1,656.0
Nebraska	1,140.7
Ohio	51.8
Oklahoma	3,634.7
Tennessee	4,853.9
Total	86,852.7

Table 5 – Percentage of 2018 growth of sawtimber on forestland (from FIA plot data) harvested (from mill survey), by species group and by MDC Region Missouri, 2018.

Species Group	Total
Shortleaf pine	41.4%
Other softwoods	25.1%
White oaks	58.6%
Red oaks	78.7%
Hickory	0.5%
Hard maple	23.6%
Soft maple	11.3%
Ash	43.6%
Cottonwood	23.0%
Black walnut	49.3%
Other hardwoods	27.5%
Total	52.1%

Region	Total
Northwest	39.2%
Kansas City	25.3%
Central	33.8%
Northeast	66.3%
St. Louis	38.8%
Southeast	67.6%
Southwest	42.7%
Ozark	66.7%
Total	52.1%

Table 6 – Estimated residue in green tons, Missouri, 2018.

Residue	Conifer	Hardwood	Total
Bark	251,131	31,955	283,087
Coarse	989,753	75,123	1,064,876
Fine	576,125	43,728	619,853
Total	1,817,009	150,807	1,967,816

Table 7 – Use of residues, weighted by mill size, Missouri, 2018.

Residue Use	Total
A: Used for manufacture of fiber products	6.5%
B: Used for manufacture of composite products	1.8%
C: Used for charcoal	36.7%
D: Used for fuel at this mill	6.7%
E: Used for fuel elsewhere	4.5%
F: Used for domestic fuel	3.6%
G: Used for miscellaneous uses	27.0%
H: Used for other	8.5%
I: Not used	4.7%

Table 8 - Volume received by mill and roundwood types in MBF, Missouri, 2018.

Species Group	Sawlogs and bolts	Veneer logs	Char- coal wood	Cabin logs	Cooper- ge logs	Excelsior /shaving bolts	Other	Poles	Posts	Total
Band sawmill	208,543.6	14,515.0			21,666.0		180.0			244,904.6
Charcoal kiln				13,053.6						13,053.6
Circular sawmill	370,346.9	0.0			0.0		90.0	400.0	300.0	371,136.9
Excelsior/shavings mill	2,719.1					7,269.8				9,988.9
Export logs - domestic	3,808.8	4,847.6								8,656.4
Export logs - international	4,871.4	2,137.1			250.0					7,258.5
Log broker	23,969.5	731.4								24,700.9
Other	873.4						17,908.6	4,000.0		22,782.0
Portable Bandsaw	2,483.2		500.0					3.8	5.8	2,992.7
Scragg sawmill	40,066.3						70,220.0	6,000.0		116,286.3
Tight cooperage					15,508.5					15,508.5
Treated post mill									750.0	750.0
Untreated post mill	39.0							346.0	2,810.0	3,195.0
Total	657,721.2	22,231.0	500.0	13,053.6	37,424.5	7,269.8	88,398.6	10,749.8	3,865.8	841,214.2

Table 9 - Volume received by species group and roundwood types in MBF, Missouri, 2018.

Species Group	Sawlogs and bolts	Veneer logs	Cabin logs	Char-coal wood	Cooper-age logs	Excelsior /shaving bolts	Other	Poles	Posts	Total
Shortleaf pine	21,771.8			600.0		5,141.0	11,027.0	5,077.9	3,560.1	47,177.7
Other softwoods	7,107.9					2,128.8	140.0	1.9	305.7	9,684.2
White oaks	158,839.2	17,989.2	100.0	3,153.1	36,682.1		22,201.0	1,512.0	-	240,476.7
Red oaks	283,393.4	1.8	350.0	7,924.7			40,877.3	3,172.0		335,719.2
Hickory	41,336.4	210.7		767.4			10,475.7	208.0		52,998.3
Hard maple	4,982.0	0.0					1.4			4,983.5
Soft maple	11,079.1						440.0			11,519.1
Ash	7,672.7		25.0		165.6		904.0			8,767.3
Cottonwood	25,152.4						440.0			25,592.4
Black walnut	59,831.3	3,090.9	25.0	600.0	165.6		60.0			63,772.7
Other hardwoods	28,049.1	0.0		8.3			1,832.1	528.0		30,417.6
Total	649,215.4	21,292.6		13,053.6	37,013.3	7,269.8	88,398.6	10,499.8	3,865.8	831,108.8

Note: Volume by species totals may not match total volume in other tables if mills did not report individual species

